Iowa Department of Agriculture & Land Stewardship Secretary Bill Northey



Update on Drainage and Levee Districts and Issues Associated with Drainage Systems

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Subsurface Drainage in Iowa

- 9 million acres with subsurface drainage
- 6 million acres in 3000 drainage and levee districts
- Investment by Iowa landowners to construct 3000 drainage and levee districts in the early 20th century exceeded the entire U.S. investment to construct the Panama Canal

Historically – early 20th century

- Improve crop production
- Facilitate transportation/road network
- Allow establishment of towns and cities
- Control mosquito-borne diseases
- Foster settlement and population establishment across much of lowa
- Others



J.B. Crim Farm
Nov 15, 1916 end of 54 inch block tile in northern Boone Co.

Today

- Lower water tables for crop root growth
- Allow timely field operations





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- Allow timely field operations
- Integral part of conservation systems for erosion and sediment control, water quality
 - Tile-outlet terraces
 - Grassed waterways
- Allow most environmentally-suitable lands to be used for food production





Today

- Lower water tables for crop root growth
- Allow timely field operations
- Integral part of conservation systems for erosion and sediment control, water quality
 - Tile-outlet terraces
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- Allow most environmentally-suitable lands to be used for food production
- Benefit towns, businesses, transportation and other infrastructure
- Manage storm and excess water



Future - Subsurface Drainage

Global demand for food will cause increased investment in cropland subsurface drainage

- 9 billion population projected by year 2050
- 3% of earth's surface is arable land
- Food production must increase 1.7% each year between now and year 2050
- Flat, tile-drained lands are well suited for food production and will experience increased production pressure
- Example, in fall 2010 in-field drainage tile sold out statewide in Iowa

Future – Drainage and Levee District Infrastructure Replacement

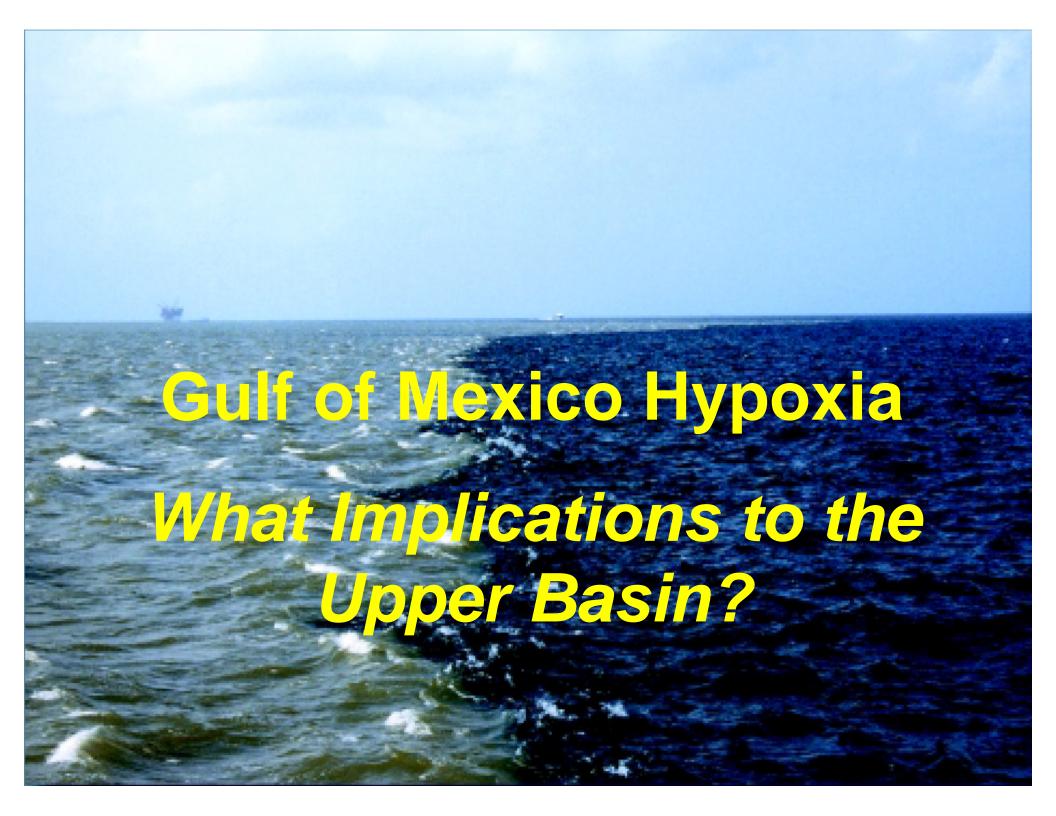
Iowa drainage district infrastructure is nearing 100 years old

- Replacement due to aging and system failures is projected by year 2050
- Estimated \$4 billion cost to Iowa landowners (2010 \$) to replace drainage district mains and laterals
- Replacement of aging in-field drains owned by landowners – what cost?

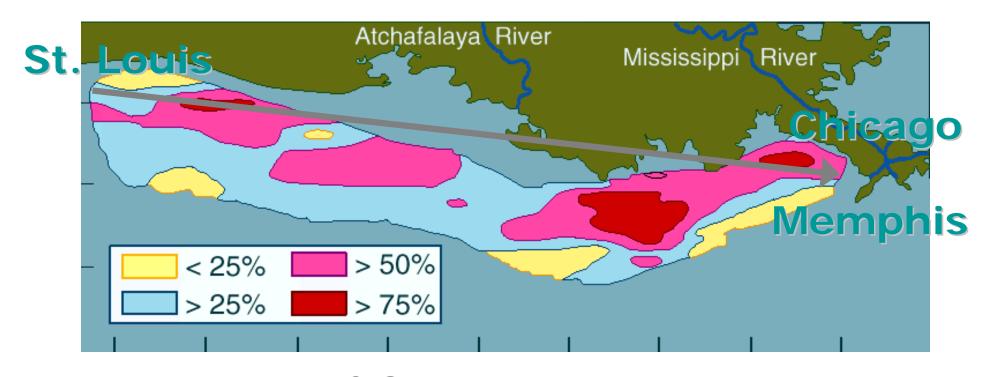
Future - "Conservation Drainage"

Subsurface drainage role in meeting conservation and environmental goals is increasingly recognized globally

- Integral component of conservation systems
- Closure of Iowa agricultural drainage wells couldn't be achieved without drainage districts
- lowa Conservation Reserve Enhancement Program (CREP) to reduce nitrate, protect drinking water, address hypoxia in the Gulf of Mexico
- lowa Wetland Landscape Systems Initiative implemented by and through drainage districts



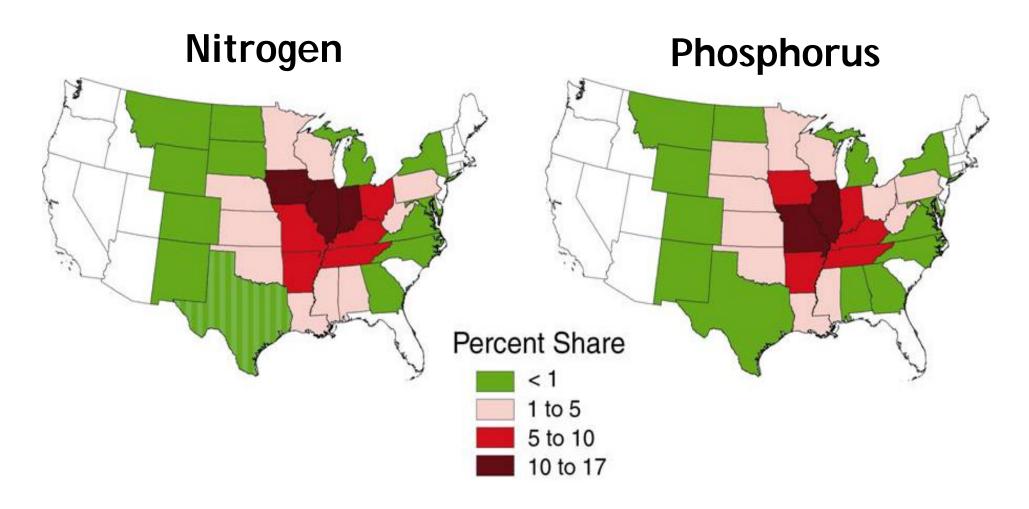
Extent of Hypoxia in the Gulf of Mexico



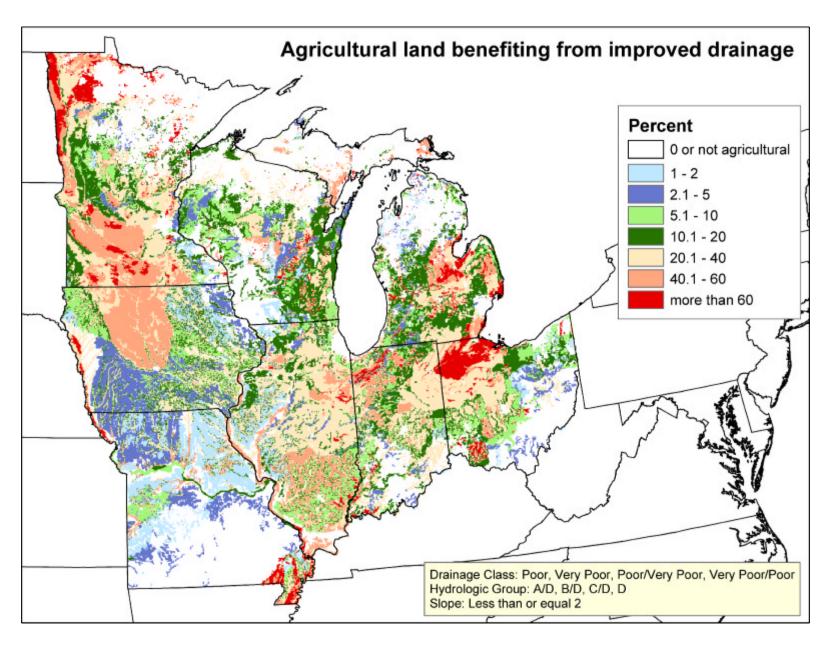
Frequency of Occurrence 1985 - 1999

Rabalais, et al.

Nutrient delivery to the Gulf of Mexico State shares of the total nutrient flux



Alexander et al, Environ. Sci. Techn., in press



USDA/ARS National Soil Tilth Laboratory 2004

Actions Needed to Meet Hypoxia Goal – By 2015

Nutrient reductions

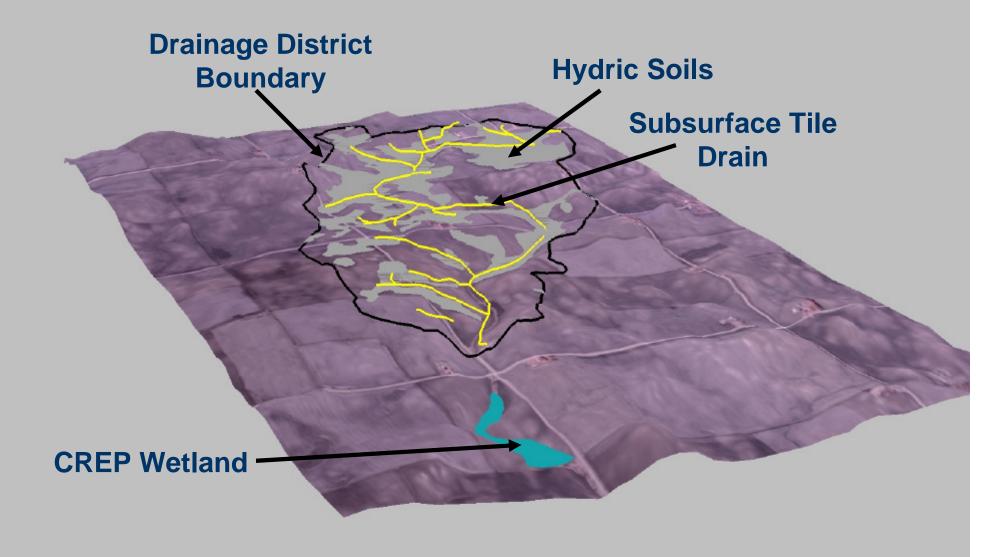
- 45% reduction of nitrogen to Gulf
- 45% reduction of phosphorus to Gulf

Potential for increasing federal regulation

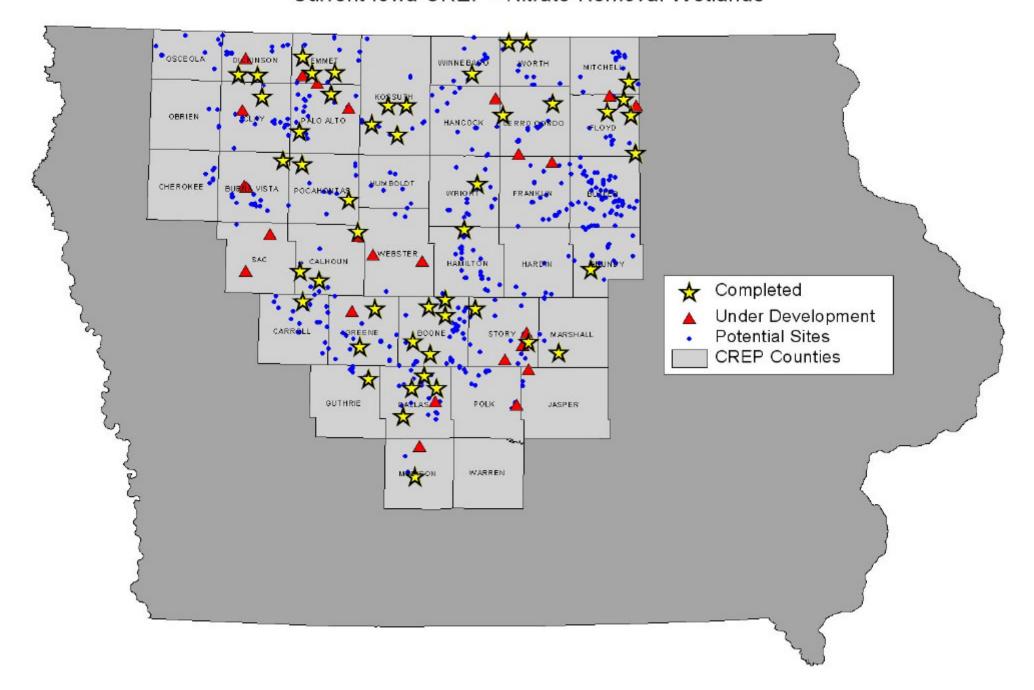
 Chesapeake Bay order, Florida, Kansas, Wisconsin, Mississippi River petitions



Iowa Conservation Reserve Enhancement Program



Current Iowa CREP - Nitrate Removal Wetlands



Iowa CREP Status

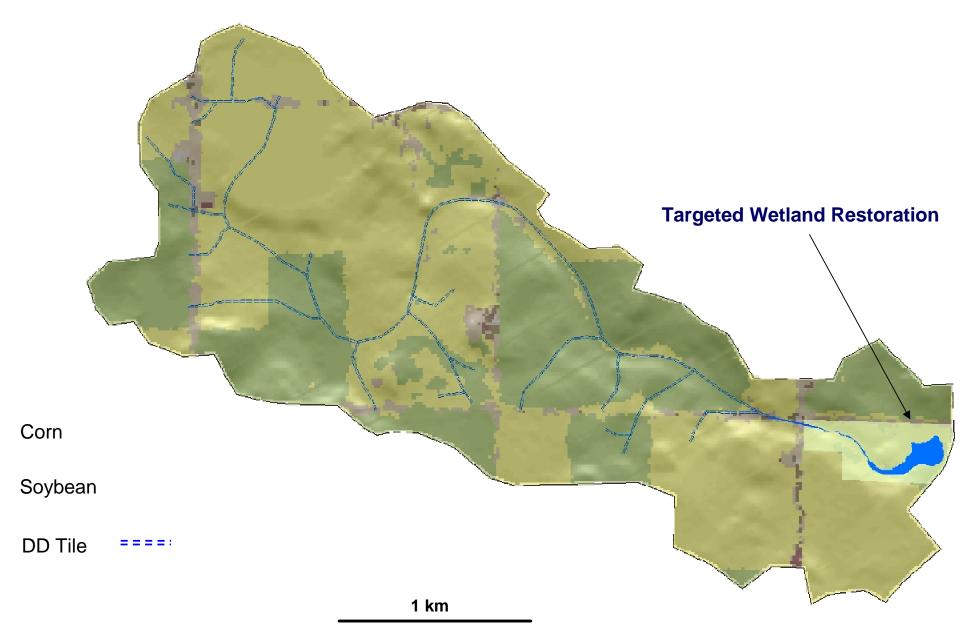
- 72 wetlands restored, under construction or design
 - 715 acres total wetland pool
 - Remove 40-70% of nitrate from 86,100 acres
 - Estimated nitrate removal over practice lifetime is 53,600 tons
 - Nitrogen removal cost \$0.23/lb, below current cost of fertilizer N



Iowa Wetland Landscape Systems Initiative

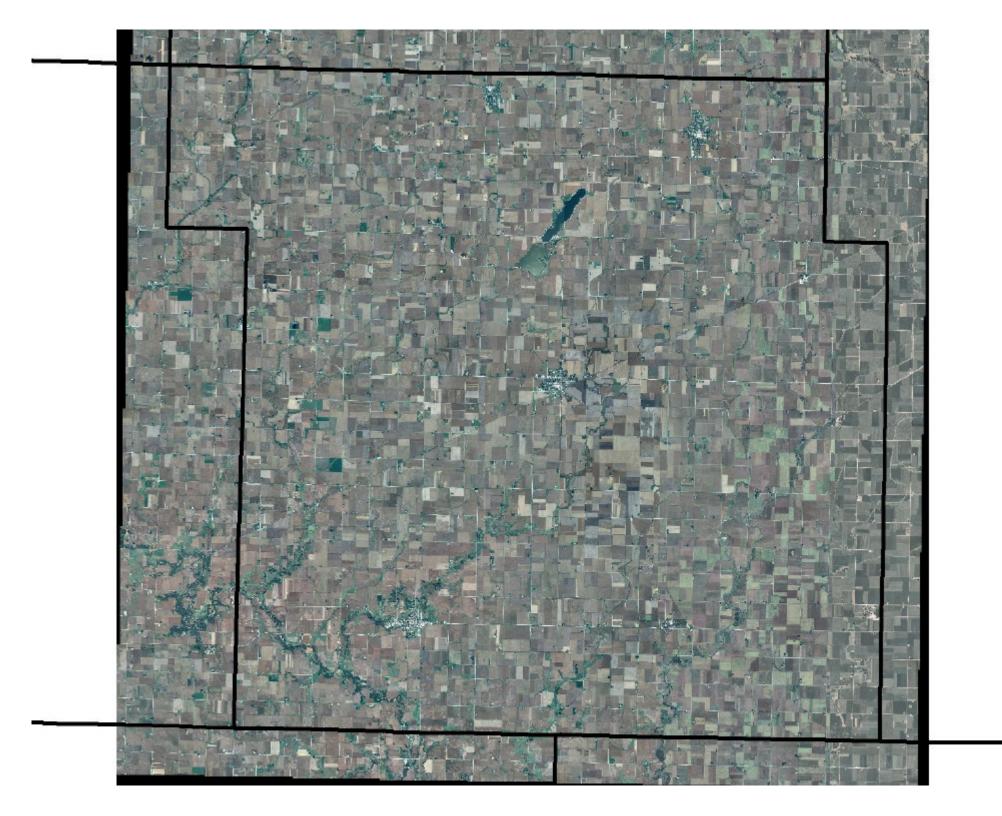
- Flat, low-erosion drained landscapes are environmentally-preferred for production of row crops
- Over the next decades the existing drainage systems in lowa's drainage districts will be replaced due to age and structural failures
- Critical Issue will these replacement systems be designed to maintain the 'status quo' or to optimize these landscapes for both environmental benefits and crop production?

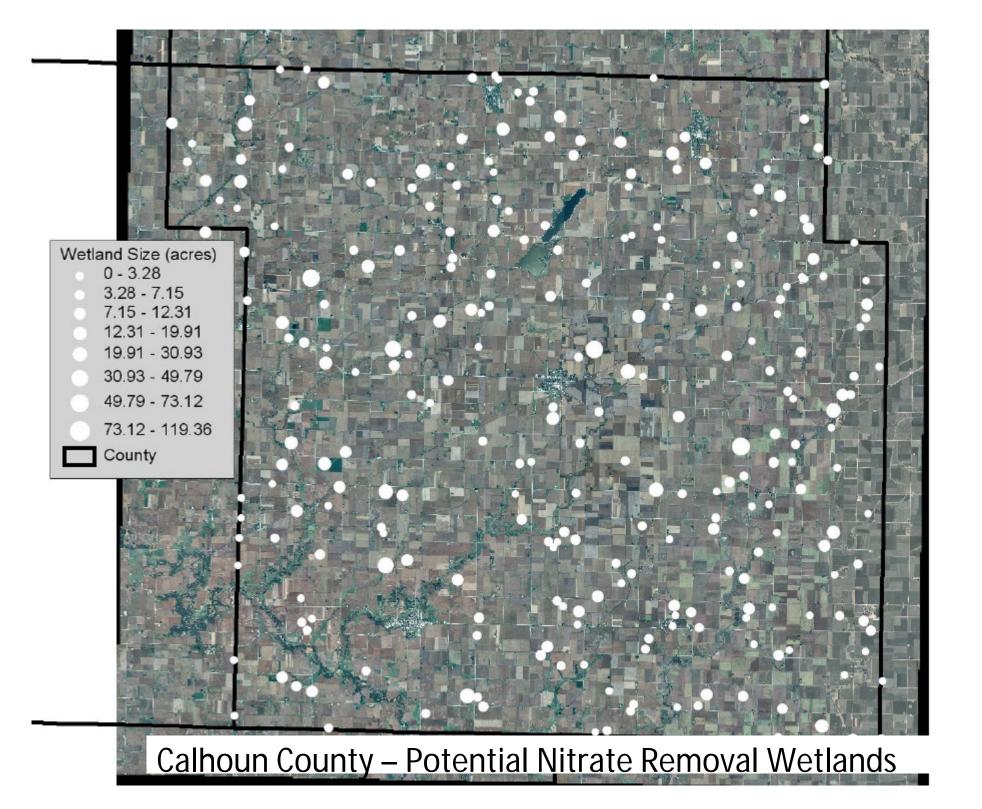
lowa Wetland Landscape Systems Initiative



Projected Environmental/Ecological Service Benefits – Wetland Landscape Systems

- Reduce nitrate transport 40-70%
- Reduce surface runoff overland flow 50%
- Reduce sediment delivery 50%
- Reduce phosphorus transport 50%
- Reduce N₂O greenhouse gas emissions
- Increase habitat and ecological service functions of the landscape – potential market force driver?
- Market force economic driver for implementation and food security benefit - optimize crop production





Pilot Demonstration Study Sites

- Solicitation of interest across 3000 watershed districts
- Pilot demonstration study watersheds
 - Pocahontas DD 65 (construction completed)
 - Clay DD 8
 - Pocahontas DD 48 & 81
 - Palo Alto DD15 North
 - Palo Alto DD15 South
 - Pocahontas/Palo Alto Joint DD36
 - Pocahontas DD178 Project Close 10 Ag Drainage Wells
 - Buena Vista DD

Interagency Working Group

Iowa Department of Agriculture & Land Stewardship (IDALS)

Iowa State University (ISU)

University of Iowa (UI)

Iowa Institute of Hydraulic Research (IIHR)

Center for Agricultural and Rural Development (CARD)

Iowa Flood Center (IFC)

Iowa Department of Natural Resources (DNR)

USDA – Farm Service Agency (FSA)

USDA – Natural Resources Conservation Service (NRCS)

USDA – Agricultural Research Service (ARS)

United States Fish & Wildlife Service (FWS)

United States Environmental Protection Agency (EPA)

United States Geological Survey (USGS)

Future – Drainage and Levee District Policy Perspectives

- "Management by and through watersheds" will be the primary framework for future water, environmental, conservation actions.
- 2. Iowa drainage and levee districts are the "gold standard" of watershed management organizational frameworks in Iowa.
- Iowa drainage and levee districts can and are playing increasing roles towards achieving conservation and environmental goals.

Future – Drainage and Levee District Policy Perspectives

- 4. The fundamental premise of drainage and levee districts and all watershed management frameworks is "contribution by all in the watershed" towards the common goal and mission.
- 5. Achieving environmental and conservation goals in lowa will be very expensive.
- 6. It will be difficult to convince lowa farmers, landowners, towns, and businesses to do their part to achieve environmental goals, if resources such as lakes owned by the "people of lowa" don't contribute their fair share of the costs.

Perspectives on Drainage District Assessment of Lakes

- 1. Thought existing statute was clear.
- 2. Existing procedures that payment is approved by Executive Council from the state treasury, and not from an agency budget, are appropriate.
- 3. Lake assessments are not an "environmental issue", rather an "economic issue".
- 4. Definition of "benefits" needs re-consideration.
- 5. Exempting some areas from assessment may lead to other areas seeking exemption, ultimately impairing the future of all watershed-level management in lowa.
- 6. "All whose excess water uses the watershed infrastructure need to share in paying the cost".

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Questions/Comments

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